



## **ENVIRONMENTAL PROTECTION AGENCY**

**[EPA-HQ-OAR-2021-0234; FRL-10022-12-OAR]**

### **Alternative Method for Calculating Off-cycle Credits under the Light-duty Vehicle Greenhouse Gas Emissions Program: Application from General Motors Corporation LLC (GM)**

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Notice.

**SUMMARY:** The Environmental Protection Agency (EPA) is requesting comment on an application from General Motors Corporation LLC (GM) for off-cycle carbon dioxide (CO<sub>2</sub>) credits under EPA’s light-duty vehicle greenhouse gas emissions standards. “Off-cycle” emission reductions can be achieved by employing technologies that result in real-world benefits, but where that benefit is not adequately captured on the test procedures used by manufacturers to demonstrate compliance with emission standards. EPA’s light-duty vehicle greenhouse gas program acknowledges these benefits by giving automobile manufacturers several options for generating “off-cycle” CO<sub>2</sub> credits. Under the regulations, a manufacturer may apply for CO<sub>2</sub> credits for off-cycle technologies that result in off-cycle benefits. In these cases, a manufacturer must provide EPA with a proposed methodology for determining the real-world off-cycle benefit. GM has submitted an application that describes a methodology for determining off-cycle credits from technologies described in their application. Pursuant to applicable regulations, EPA is making this off-cycle credit calculation methodology available for public comment.

**DATES:** Comments must be received on or before **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

**ADDRESSES:** Submit your comments, identified by Docket ID No. EPA–HQ– OAR– 2021–0234, to the Federal eRulemaking Portal: <http://www.regulations.gov>. Follow the

online instructions for submitting comments. Once submitted, comments cannot be edited or withdrawn. The EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (i.e. on the web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit <http://www2.epa.gov/dockets/commenting-epa-dockets>.

**FOR FURTHER INFORMATION CONTACT:** Linc Wehrly, Office of Transportation and Air Quality, Compliance Division, U.S. Environmental Protection Agency, 2000 Traverwood Drive, Ann Arbor, MI 48105. Telephone: (734) 214-4286. Fax: (734) 214-4869. Email address: [wehrly.linc@epa.gov](mailto:wehrly.linc@epa.gov).

## **SUPPLEMENTARY INFORMATION:**

### **I. Background**

EPA's light-duty vehicle greenhouse gas (GHG) program provides three pathways by which a manufacturer may accrue off-cycle carbon dioxide (CO<sub>2</sub>) credits for those technologies that achieve CO<sub>2</sub> reductions in the real world but where those reductions are not adequately captured on the test used to determine compliance with the CO<sub>2</sub> standards, and which are not otherwise reflected in the standards' stringency. The first pathway is a predetermined list of credit values for specific off-cycle technologies that may be used

beginning in model year 2014.<sup>1</sup> This pathway allows manufacturers to use conservative credit values established by EPA for a wide range of technologies, with minimal data submittal or testing requirements, if the technologies meet EPA regulatory definitions. In cases where the off-cycle technology is not on the menu but additional laboratory testing can demonstrate emission benefits, a second pathway allows manufacturers to use a broader array of emission tests (known as “5-cycle” testing because the methodology uses five different testing procedures) to demonstrate and justify off-cycle CO<sub>2</sub> credits.<sup>2</sup> The additional emission tests allow emission benefits to be demonstrated over some elements of real-world driving not adequately captured by the GHG compliance tests, including high speeds, hard accelerations, and cold temperatures. These first two methodologies were completely defined through notice and comment rulemaking and therefore no additional process is necessary for manufacturers to use these methods. The third and last pathway allows manufacturers to seek EPA approval to use an alternative methodology for determining the off-cycle CO<sub>2</sub> credits.<sup>3</sup> This option is only available if the benefit of the technology cannot be adequately demonstrated using the 5-cycle methodology. Manufacturers may also use this option to demonstrate reductions that exceed those available via use of the predetermined list.

Under the regulations, a manufacturer seeking to demonstrate off-cycle credits with an alternative methodology (i.e., under the third pathway described above) must describe a methodology that meets the following criteria:

- Use modeling, on-road testing, on-road data collection, or other approved analytical or engineering methods;

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<sup>1</sup> See 40 CFR 86.1869-12(b).

<sup>2</sup> See 40 CFR 86.1869-12(c).

<sup>3</sup> See 40 CFR 86.1869-12(d).

- Be robust, verifiable, and capable of demonstrating the real-world emissions benefit with strong statistical significance;
- Result in a demonstration of baseline and controlled emissions over a wide range of driving conditions and number of vehicles such that issues of data uncertainty are minimized;
- Result in data on a model type basis unless the manufacturer demonstrates that another basis is appropriate and adequate.

In addition, the regulations specify the following requirements regarding an application for off-cycle CO<sub>2</sub> credits:

- A manufacturer requesting off-cycle credits must develop a methodology for demonstrating and determining the benefit of the off-cycle technology and carry out any necessary testing and analysis required to support that methodology.
- A manufacturer requesting off-cycle credits must conduct testing and/or prepare engineering analyses that demonstrate the in-use durability of the technology for the full useful life of the vehicle.
- The application must contain a detailed description of the off-cycle technology and how it functions to reduce CO<sub>2</sub> emissions under conditions not represented on the FTP and HFET compliance tests.
- The application must contain a list of the vehicle model(s) which will be equipped with the technology.
- The application must contain a detailed description of the test vehicles selected and an engineering analysis that supports the selection of those vehicles for testing.
- The application must contain all testing and/or simulation data required under the regulations, plus any other data the manufacturer has considered in the analysis.

Finally, the alternative methodology must be approved by EPA prior to the manufacturer using it to generate credits. As part of the review process defined by regulation, an application for credits using an alternative methodology submitted to EPA for consideration must be made available for public comment, unless EPA has previously approved the alternative methodology for determining credits and has chosen to waive the notice and comment period for an application that meets the regulatory requirements for such a waiver. Further, EPA retains the option to require a notice and opportunity for public comment in cases where a new application deviates in significant respects from a previously approved methodology or raises novel substantive issues.<sup>4</sup> EPA will consider public comments as part of its final decision to approve or deny the request for off-cycle credits.

## **II. Off-Cycle Credit Application**

### **Pulse Width Modulated HVAC Brushless Motor Power Controller Technology**

Using the alternative methodology approach discussed above, GM is requesting off-cycle greenhouse gas (“GHG”) credits for the use of the pulse width modulated (PWM) HVAC brushless motor (BLM) power controller technology. The company’s analysis in their application yields a GHG credit equal to 0.4 grams CO<sub>2</sub> per mile for passenger cars and trucks on vehicles equipped with this technology. The PWM BLM technology provides GHG reductions by improving the efficiency of the blower motor used in the heating, ventilation, and air conditioning (HVAC) system.

GM’s request is for approval of a similar methodology and for the same amount of credits per vehicle granted in the Toyota request to EPA for off-cycle

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<sup>4</sup> See 40 CFR 86.1869-12(d)(2).

credit dated February 26, 2019 and subsequently granted in EPA decision document EPA-420-R-19-015. Details of Toyota's analysis and the approved request by Toyota can be found in the corresponding the manufacturer's applications.

### **III. EPA Decision Process**

EPA has reviewed the application for completeness and is now making the application available for public review and comment as required by the regulations. The off-cycle credit application submitted by the manufacturer (with confidential business information redacted) has been placed in the public docket (see ADDRESSES section above) and on EPA's web site at <https://www.epa.gov/vehicle-and-engine-certification/compliance-information-light-duty-greenhouse-gas-ghg-standards>.

EPA is providing a 30-day comment period on the application for off-cycle credits described in this notice, as specified by the regulations. The manufacturer may submit a written rebuttal of comments for EPA's consideration, or may revise an application in response to comments. After reviewing any public comments and any rebuttal of comments submitted by the manufacturer, EPA will make a final decision regarding the credit request. EPA will make its decision available to the public by placing a decision document on EPA's web site at the same manufacturer-specific page described above.

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